APPENDIX C

CANDIDATE SUBTESTS

C-0   GENERAL.   This appendix describes the candidate subtest used to determine to what extent a client or server correctly implements the Image Access Service (IAS) specification with the specializations defined in the IAS Specification Validation Test Profile (IVTP).   Each of the subtests in this section represents an interface method that clients and servers must implement.

C-0.1   Objective.   Each subtest has unique objectives listed within that specific subtest's section.   Odd numbered subtests evaluate server implementations of the interface methods, while even numbered subtests evaluate the client implementations.   Table C-1 shows the mapping between IAS interface methods and the applicable subtests.   Subtests 55 describe the Boolean Syntax Query (BQS) criteria for both the client and server.

C-0.2   Criteria.   Each subtest has unique criteria listed to evaluate a given method.   The criteria are derived from the IAS specification and the IVTP.   The IVTP, a subset of the Common Imagery Interoperability Profile (CIIP), is used for the validation testing.   Any formal certification testing of implementations would be evaluated against the full CIIP.

The criteria afford three areas of coverage:

      a.   Method Functionality.   This area of coverage evaluates the functionality behind the formal Interface Definition Language (IDL) interface as defined in the IAS and IVTP.

      b.   Method Exceptions.   This area of coverage evaluates the generation/ handling of exceptions.   The exceptions are defined as part of the method description in the IAS.

      c.   Parameters Interface.   This area of coverage evaluates the information passed through the Parameters interface that influences the way the method operates.   These values are defined in the IVTP.

Table C-1. Subtest Summary

Interface	Methods	Image Access Facility		Catalog Access Facility		Profile and Notification	
Image Access	disseminate	1	2				
	check_completion	3	4				
	cancel	5	6				
	create	7	8				
	open_array	9	10				
	close_array	11	12				
	get_region	13	14				
	get_multiple_regions	15	16				
Server	open	17	18	17	18	17	18
	close	19	20	19	20	19	20
Parameters	get_parameters	21	22	21	22	21	22
	set_parameters	23	24	23	24	23	24
Image Access	get_subimage	25	26				
Catalog Access	Boolean_query			27	28	39	40
	polygonal_query			29	30	39	40
	elliptical_query			31	32	39	40
	point_query			33	34	39	40
	get_ results			35	36	35	36
	free_results			37	38	41	42
BQS				55	55	55	55
Profile and Notification	list_queries					43	44
	remove_query					45	46
	request_ notification					47	48
PNF_Callback	notify					51	52

Access Management	use_modes	Not Tested		
	check_availability	Not Tested		
	request_availability	Not Tested		

Note 1.   Odd numbers subtests evaluate server implementations.
Note 2.   Even numbered subtests evaluate client implementations.
Note 3.   Subtest 55 for both clients and servers.

C-0.3   **Data Requirements.** Data collection requirements general to all criteria are as follows. Additional data collection requirements for each subtest, where applicable, will be included in that subtest.

     a.   **Criteria Related Data**

     (1)   Annotated scenario data collection forms with any anomalies noted that influence the operation of the methods.

     (2)   Thrown exception.

     b.   **Supplemental Data**

     (1)   Content of formal IDL parameters.

     (2)   Content of variables in parameter interface that influence the operation of the function.

C-0.4   **Test Procedures**

     a.   **Test Conduct.** The client or server functions will be exercised using scenarios described in Appendix E. Descriptions of the control data files are located in Appendix F.

     b.   **Data Collection.**   The following describes common data collection items common to all subtests. Additional data collection requirements for each subtest where applicable will be included in that subtest.

     (1)   Scenario data collection forms will be annotated with any anomalies noted.

     (2)   Where available the client or server will provide a listing of the IDL parameter values. For example, the client or server in debug mode.

C-0.5   **Presentation of Results.**   After all scenarios have been completed, data collection forms will be annotated with any anomalies detected.   Where anomalies occur, hard copies of the differences will be produced for analysis.   A matrix will be developed to provide the results of each subtest.

C-0.6   **Analysis and Discussion.**   The test team will examine all test data to verify that the client or server correctly implements the interface method.   Where anomalies exist, a determination will be made of the impact on validation.

C-1   SUBTEST 1, SERVER, DISSEMINATE()

C-1.1   Objective.   Determine to what extent the server can implement the disseminate method.

C-1.2   Criteria

C-1.2.1   Method Functionality

      a.   Disseminate the image product to one or more destinations. (IAS 3.2.2.1)

      b.   Disseminate an image product with the response service set to one of the following: (IAS 3.2.5.1)

           (1)   IMMEDIATE

           (2)   QUEUED

      c.   A valid list of unique RequestId's are returned. (IAS 3.2.5.1)

C-1.2.2   Method Exceptions

      a.   Exception BadProductReference is raised when the image product reference is not present or the reference is invalid. (IAS 3.2.5.1)

      b.   Exception BadLocationSpec is raised when one or more locations are syntactically invalid. (IAS 3.2.5.1)

      c.   Exception ResponseServiceNotAvailable is raised when the server does not support the requested quality of service. (IAS 3.2.5.1)

      d.   Exception TooManyRequests is raised when the server's implementation limit is exceeded for the number of outstanding requests. (IAS 3.2.5.1)

      e.   Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.5.1

C-1.2.3   Parameters Interface

a. Disseminate an image with ProductCompression set to only one of the following: (IAS 3.2.2.2) (IVTP 4.1.2.1.1.2)

        (1)   "UNC", "NITF20" only.

        (2)   "JPEG8", "NITF20" only.

        (3)   "JPEG12", "NITF20" only.

        (4)   "TFRD43", "TFRD" only.

b. Disseminate an image with ProductDataFormat set to one or the following: (IAS 3.2.2.2) (IVTP 4.1.2.1.1.2)

        (1)   "NITF20"

        (2)   "TFRD"

c. GeographicDatum Not Applicable

d. Disseminate an image with ProductRRDS set to the requested resolutions, in the range 0-7. Multiple RRDS's may be requested in the sequence. (IAS 3.2.2.2) (IVTP 4.1.2.1.1.2)

C-1.3   **Data Requirements.** Data collection requirements are as follows:

a.   **Criteria Related Data**. Image file at each specified destination.

C-1.4   **Test Procedures**

a.   **Data Collection**. Image viewers and image compare programs will be used to identify differences between the disseminated images and the control images. Any differences will be saved and noted on the scenario data collection forms.

C-2   SUBTEST 2, CLIENT, DISSEMINATE()

C-2.1   Objective.   Determine to what extent the client can implement the disseminate method call.

C-2.2   Criteria

C-2.2.1   Method Functionality

     a.   Request the dissemination of an image product to one or more destinations. (IAS 3.2.5.1)

     b.   Request the dissemination of an image product with the response service set to one of the following: (IAS 3.2.5.1)

          (1)   IMMEDIATE

          (2)   QUEUED

     c.   The returned RequestIds can be used to track the progress of the request. (IAS 3.2.5.1)

C-2.2.2   Method Exceptions.   The following exceptions are gracefully handled:

     a.   BadProductReference. (IAS 3.2.5.1)

     b.   BadLocationSpec. (IAS 3.2.5.1)

     c.   ResponseServiceNotAvailable. (IAS 3.2.5.1)

     d.   TooManyRequests. (IAS 3.2.5.1)

     e.   BAD_INV_ORDER. (IAS 3.2.5.1)

C-2.2.3   Parameters Interface

     a.   Request the dissemination of an image with ProductCompression set to only one of the following: (IVTP 4.1.2.1.1.2)

          (1)   "UNC", "NITF20" only.

          (2)   "JPEG8", "NITF20" only.

(3)   "JPEG12", "NITF20" only.

(4)   "TFRD43", "TFRD" only.

b.   Request the dissemination of an image with ProductDataFormat set to one or the following: (IVTP 4.1.2.1.1.2)

(1)   "NITF20"

(2)   "TFRD"

c.   GeographicDatum Not applicable.

d.   Request to disseminate an image with ProductRRDS set to the requested resolutions, in the range 0-7. Multiple RRDS's may be requested in the sequence. (IAS 3.2.2.2) (IVTP 4.1.2.1.1.2)

C-2.3   **Data Requirements.** Data collection requirements are as follows:

a.   **Criteria Related Data**. Image file at each specified destination.

C-2.4   **Test Procedures**

a.   **Data Collection**.   Image viewers and image compare programs will be used to identify differences between the disseminated images and the control images. Any differences will be saved and noted on the scenario data collection forms.

C-3   **SUBTEST 3, SERVER, CHECK_COMPLETION()**

C-3.1   **Objective.**   Determine to what extent the server can implement the check_completion method.

C-3.2   **Criteria**

C-3.2.1   **Method Functionality**

       a.   The status of the disseminate request is returned to the user. (IAS 3.2.5.1, 3.2.5.2)

       b.   The status of the create request is returned to the user. (IAS 3.2.5.4, 3.2.5.2)

       c.   The status of the get_subimage request is returned to the user. (IAS 3.2.5.5, 3.2.5.2)

       d.   The status of COMPLETED is returned when the transfer has been completed. (IAS 3.1.1.5)

       e.   The status of IN_PROGRESS is returned when the transfer is ongoing. (IAS 3.1.1.5)

       f.   The status of ABORTED is returned when an error condition causes an abnormal termination. (IAS 3.1.1.5)

       g.   The status of CANCELED is returned when the transfer has been canceled by the client. (IAS 3.1.1.5)

       h.   The status of PENDING is returned when the transfer is awaiting future service when in ResponseService mode of QUEUED. (IAS 3.1.1.5)

       i.   The status of OTHER is returned. Optional TBD. (IAS 3.1.1.5)

       j.   A reason may be stated in the state_information string. (IAS 3.1.1.5)

C-3.2.2   **Method Exceptions.** The following exceptions are gracefully handled:

       a.   Exception BadRequestId is raised when the request identifier is invalid. (IAS 3.1.2.1)

b. Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.5.2)

C-3.2.3   **Parameters Interface.** None

C-3.3   **Data Requirements.** Data collection requirements are as follows:

    a.   **Criteria Related Data.** Returned completion state.

C-3.4   **Test Procedures**

    a.   **Data Collection.** Client application notification to user of completion status.

C-4   SUBTEST 4, CLIENT, CHECK_COMPLETION()

C-4.1   Objective.   Determine to what extent the client can implement the check_completion method call.

C-4.2   Criteria

C-4.2.1   Method Functionality

> **a.**   The client uses the RequestId from a previous disseminate call to determine the status of the request. (IAS 3.2.5.1, 3.2.5.2)

> **b.**   The client uses the RequestId from a previous create call to determine the status of the request. (IAS 3.2.5.2 3.2.5.4)

> **c.**   The client uses the RequestId from a previous get_subimage call to determine the status of the request. (IAS 3.2.5.2 3.2.5.5)

> **d.**   The status of COMPLETED is displayed when the transfer has been completed. (IAS 3.1.1.5)

> **e.**   The status of IN_PROGRESS is displayed when the transfer is ongoing. (IAS 3.1.1.5)

> **f.**   The status of ABORTED is displayed when the transfer has been aborted. (IAS 3.1.1.5)

> **g.**   The status of CANCELED is displayed when the transfer has been canceled by the client. (IAS 3.2.2.2)

> **h.**   The status of PENDING is displayed when the transfer is awaiting future service when in ResponseService mode of QUEUED. (IAS 3.1.1.5)

> **i.**   The status of OTHER is displayed. (IAS 3.1.1.5)

> **j.**   Additional information in the state_information string is displayed. (IAS 3.1.1.5)

C-4.2.2   Method Exceptions. The following exceptions are gracefully handled:

> **a.**   BadRequestId (IAS 3.1.2.1)

        b.   BAD_INV_ORDER (IAS 3.2.5.2)

C-4.2.3   **Parameters Interface.** None

C-4.3   **Data Requirements.** Data collection requirements are as follows:

        a.   **Criteria Related Data**. Returned completion state.

C-4.4   **Test Procedures**

        a.   **Data Collection**.   Client application notification to user of completion status.

C-5   **SUBTEST 5, SERVER, CANCEL()**

C-5.1   **Objective.**   Determine to what extent the server can implement the cancel method.

C-5.2   **Criteria**

C-5.2.1   **Method Functionality**

       a.   The image dissemination request is terminated by the client. (IAS 3.2.5.3, 3.2.5.1)

       b.   The image creation request is terminated by the client. (IAS 3.2.5.3, 3.2.5.4)

       c.   The get_subimage request is terminated by the client. (IAS 3.2.5.3, 3.2.5.5)

       d.   The status of COMPLETED is returned when the cancellation request is successful or the transfer has previously been completed. (IAS 3.1.1.5, 3.2.5.3)

       e.   The status of ABORTED is returned when an error condition causes an abnormal termination. (IAS 3.1.1.5)

C-5.2.2   **Method Exceptions**

       a.   Exception BadRequestId is raised when request identifier is invalid. (IAS 3.2.5.3)

       b.   Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.5.3)

C-5.2.3   **Parameters Interface.**   None

C-5.3   **Data Requirements.**   Data collection requirements are as follows:

       a.   **Criteria Related Data**

       (1)   The product is not located at the destination or in the library.

(2)   Returned completion state.

C-5.4   **Test Procedures**

　　　　a.   **Data Collection.**   Client application notification to user of completion status.

C-6   SUBTEST 6, CLIENT, CANCEL()

C-6.1   Objective.   Determine to what extent the client can implement the cancel method call.

C-6.2   Criteria

C-6.2.1   Method Functionality

  a.   The client uses the RequestId from a previous disseminate call to cancel the request. (IAS 3.2.5.1, 3.2.5.3)

  b.   The client uses the RequestId from a previous create call to cancel the request. (IAS 3.2.5.3, 3.2.5.4)

  c.   The client uses the RequestId from a previous get_subimage call to cancel the request. (IAS 3.2.5.3, 3.2.5.5)

  d.   The status of COMPLETED is returned when the cancellation request is successful or the transfer has previously been completed. (IAS 3.1.1.5, 3.2.5.3)

  e.   The status of ABORTED and reason is displayed when the transfer has been aborted. (IAS 3.1.1.5)

C-6.2.2   Method Exceptions.   The following exceptions are gracefully handled:

  a.   BadRequestId (IAS 3.2.5.3)

  b.   BAD_INV_ORDER (IAS 3.2.5.3)

C-6.2.3   Parameters Interface.   None

C-6.3   Data Requirements.   Data collection requirements are as follows:

  a.   **Criteria Related Data**

   (1)   The product is not located at the destination or in the library.

   (2)   Returned completion state.

C-6.4   Test Procedures

a. **Data Collection.** Server application notification to user of completion status.

C-7   SUBTEST 7, SERVER, CREATE()

C-7.1   Objective.   Determine to what extent the server can implement the create method.

C-7.2   Criteria

C-7.2.1   Method Functionality

     a.   The image product at the location specified by the LocationSpec is created in the server's library catalog. (IAS 3.2.5.4)

     b.   The creation_attribute metadata contains any information in addition to that which is contained in the source data. (IAS 3.2.5.4) (IVTP 4.1.2.1.1.1)

     c.   A valid unique RequestId is returned. (IAS 3.2.5.4)

     d.   A valid product reference is returned. (IAS 3.2.5.4)

C-7.2.2   Method Exceptions

     a.   Exception BadCreationAttributes is raised when the metadata in the creation_attributes or source data are invalid. (IAS 3.2.5.4)

     b.   Exception BadLocationSpec is raised when the image product location is syntactically invalid. (IAS 3.2.5.4)

     c.   Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.5.4)

C-7.2.3   Parameters Interface. None.

C-7.3   Data Requirements. Data collection requirements are as follows:

     a.   **Criteria Related Data**. The product is located in the library.

C-7.4   Test Procedures

     a.   **Data Collection**.   Client application notification to user of completion status.

C-8   SUBTEST 8, CLIENT, CREATE()

C-8.1   Objective.   Determine to what extent the client can implement the create method call.

C-8.2   Criteria

C-8.2.1   Method Functionality

       a.   Request the creation of an image product in the library of the source data file located at the specified location. (IAS 3.2.5.4)

       b.   The creation_attribute metadata contains any information in addition to that which is contained in the source data.   (IAS 3.2.5.4) (IVTP 4.1.2.1.1.1)

       c.   The returned RequestId can be used to check completion of the product creation or cancel the creation of the product. (IAS 3.2.5.4)

       d.   The returned product reference can be used be used with other methods such as disseminate once the create is complete. (IAS 3.2.5.4)

C-8.2.2   Method Exceptions.   The following exceptions are gracefully handled:

       a.   BadCreationAttributes (IAS 3.2.5.4)

       b.   BadLocationSpec (IAS 3.2.5.4)2)

       c.   BAD_INV_ORDER (IAS 3.2.5.4)

C-8.2.3   Parameters Interface.   None.

C-8.3   Data Requirements.   Data collection requirements are as follows:

       a.   **Criteria Related Data**.   The product is located in the library.

C-8.4   Test Procedures

       a.   **Data Collection**.   Client application notification to user of completion status.

C-9   SUBTEST 9, SERVER, OPEN_ARRAY()

C-9.1   Objective.   Determine to what extent the server can implement the open_array method.

C-9.2   Criteria

C-9.2.1   Method Functionality

      a.   The open_array method is called before any other method from the array request interface. (IAS 3.3.5.6)

      b.   The parameter access_kind is unused.   (IAS 3.3.5.6)   (IVTP 4.1.2.1.1.1)

C-9.2.2   Method Exceptions

      a.   Exception BadProductReference is raised when the array product reference is invalid. (IAS 3.3.5.6)

      b.   Exception ProductUnavailable is raised when the server is temporarily unable to open the array. (IAS 3.3.5.6)

      c.   Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.3.5.6)

C-9.2.3   Parameters Interface. None

C-9.3   Data Requirements.   No additional data collection requirements are required.

C-9.4   Test Procedures.   No additional data collection requirements are required.

C-10 **SUBTEST 10, CLIENT, OPEN_ARRAY()**

C-10.1 **Objective.** Determine to what extent the client can implement the open_array method call.

C-10.2 **Criteria**

C-10.2.1 **Method Functionality**

    a. The open_array method is called before any other method from the array request interface. (IAS 3.3.5.6)

    b. The parameter access_kind is nil. (IAS 3.3.5.6)

C-10.2.2 **Method Exceptions.** The following exceptions are gracefully handled:

    a. The BadProductReference (IAS 3.3.5.6)

    b. ProductUnavailable (IAS 3.3.5.6)

    c. BAD_INV_ORDER (IAS 3.3.5.6)

C-10.2.3 **Parameters Interface.** None

C-10.3 **Data Requirements.** No additional data collection requirements are required.

C-10.4 **Test Procedures.** No additional data collection requirements are required.

C-11   SUBTEST 11, SERVER, CLOSE_ARRAY()

C-11.1   Objective.   Determine to what extent the server can implement the close_array method.

C-11.2   Criteria

C-11.2.1   Method Functionality

      a.   The close_array method is called after open_array and any other array request methods. (IAS 3.3.5.7)

C-11.2.2   Method Exceptions

      a.   Exception BadProductReference is raised when the array product reference is invalid. (IAS 3.3.5.7)

      b.   Exception ArrayNotOpen is raised when the array product has not been previously opened for this client. (IAS 3.3.5.7)

      c.   Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.3.5.7)

C-11.2.3   Parameters Interface.   None.

C-11.3   Data Requirements.   No additional data collection requirements are required.

C-11.4   Test Procedures.   No additional data collection requirements are required.

C-12   **SUBTEST 12, CLIENT, CLOSE_ARRAY()**

C-12.1   **Objective.**   Determine to what extent the client can implement the close_array method call.

C-12.2   **Criteria**

C-12.2.1   **Method Functionality**

      a.   The close_array method is called after open_array and any other array request methods. (IAS 3.3.5.7)

C-12.2.2   **Method Exceptions.**   The following exceptions are gracefully handled:

      a.   BadProductReference. (IAS 3.3.5.7)

      b.   ArrayNotOpen. (IAS 3.3.5.7)

      c.   BAD_INV_ORDER (IAS 3.3.5.7))

C-12.2.3   **Parameters Interface.**   None.

C-12.3   **Data Requirements.**   No additional data collection requirements are required.

C-12.4   **Test Procedures.**   No additional data collection requirements are required.

C-13   SUBTEST 13, SERVER, GET_REGION()

C-13.1   Objective.   Determine to what extent the server can implement the get_region method.

C-13.2   Criteria

C-13.2.1   Method Functionality

     a.   The server provides pixel data from the array product based on the region_spec. (IAS 3.2.5.8)

     b.   The RegionData is returned where the region_spec is the actual returned region specification, the region_header provides descriptive data on the region, and the region_data is the actual data. (IAS 3.2.5.8)

     c.   The region_spec parameter is specialized with the DisplayRegionSpec data type. (IAS 3.1.1.14) (IVTP 4.1.2.1.1.1)

     d.   The region_header NameValueList contains the following entries and the value field is a string representation of the information:

          (1)   "NCOLS" (IVTP 4.1.2.1.1.1)

          (2)   "NROWS" (IVTP 4.1.2.1.1.1)

          (3)   "PixelDepth" (IVTP 4.1.2.1.1.1)

C-13.2.2   Method Exceptions

     a.   Exception BadProductReference is raised when the array product reference is invalid. (IAS 3.2.5.8)

     b.   Exception BadRegionSpec is raised when the region_spec does not lie within the image. (IAS 3.2.5.8)

     c.   Exception BadRegionData is raised when the data is unavailable in the appropriate compression. (IAS 3.2.5.8)

     d.   Exception BadRegionData is raised when the data is unavailable in the appropriate data format. (IAS 3.2.5.8)

e. Exception BadRegionData is raised when the data is unavailable in the appropriate resolution. (IAS 3.2.5.8)

f. Exception ArrayNotOpen is raised when the array product has not been previously opened by this client. (IAS 3.2.5.8))

g. Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.5.8)

C-13.2.3 **Parameters Interface**

a. The RegionParameters parameter specify the size of the region and the resolution level and is contained with the RegionParameters structure. (IAS 3.1.1.13, 3.2.2.2)

b. ProductCompression. Not used, data is uncompressed.

c. ProductDataFormat. Not used.

d. Optimize retrieval of RegionData based on HorizMotionRate and VertMotionRate. (IVTP 4.1.2.1.1.2)

e. SupportData. Not used.

C-13.3 **Data Requirements.** Data collection requirements are as follows:

a. **Criteria Related Data**. Region pixel data.

C-13.4 **Test Procedures**

a. **Data Collection.** RegionData will be displayed on the client screen.

C-14   SUBTEST 14, CLIENT, GET_REGION()

C-14.1   Objective.   Determine to what extent the client can implement the get_region method call.

C-14.2   Criteria

C-14.2.1   Method Functionality

   a.   The client provides the center x and y coordinate in the DisplayRegionSpec which is a specialization of the region_spec. (IAS   3.2.5.8, 3.1.1.14) (IVTP 4.1.2.1.1.1)

   b.   The RegionData is received where the region_spec is the actual returned region, the region_header describes the region, and the region_data is the actual data. (IAS 3.1.1.14, 3.2.5.8)

   c.   The region_header NameValueList contains the following entries and the value field is a string representation of the information:

      (1)   "NCOLS" (IVTP 4.1.2.1.1.1)

      (2)   "NROWS" (IVTP 4.1.2.1.1.1)

      (3)   "PixelDepth" (IVTP 4.1.2.1.1.1)

C-14.2.2   Method Exceptions. The following exceptions are gracefully handled:

   a.   BadProductReference (IAS 3.2.5.8)

   b.   BadRegionSpec (IAS 3.2.5.8)

   c.   BadRegionData (IAS 3.2.5.8)

   d.   ArrayNotOpen (IAS 3.2.5.8)

   e.   BAD_INV_ORDER (IAS 3.2.5.8)

C-14.2.3   Parameters Interface

a. The client requests the size of the region and the resolution level and is contained with the RegionParameters structure in the parameter RegionParameters. (IAS 3.1.1.13, 3.2.2.2)

b. ProductCompression. Not used, data is uncompressed.

c. ProductDataFormat. Not used.

d. The client provides an indication to the server of future region requests in the HorizMotionRate and VertMotionRate parameters. (IVTP 4.1.2.1.1.2)

e. SupportData. Not Used.

C-14.3 **Data Requirements.** Data collection requirements are as follows:

a. **Criteria Related Data**. Region pixel data.

C-14.4 **Test Procedures**

a. **Data Collection.** RegionData will be displayed on the client screen.

C-15   SUBTEST 15, SERVER, GET_MULTIPLE_REGIONS()

C-15.1   Objective.   Determine to what extent the server can implement the get_multiple_regions method.

C-15.2   Criteria

C-15.2.1   Method Functionality

       a.   The server provides pixel data for multiple regions from the array product based on the region_spec list. (IAS 3.2.5.9)

       b.   The list of RegionData is returned where the region_data_list contains the actual returned regions, the region_headers provide descriptive data on the region, and the region_data are the actual data. (IAS 3.2.5.9) (IVTP 4.1.2.1.1.1)

       c.   The region_spec parameter is specialized with the TileRegionSpec data type. (IAS 3.1.1.14) (IVTP 4.1.2.1.1.1)

       d.   The region_header NameValueList contains the following entries and the value field is a string representation of the information:

           (1)   "NCOLS" (IVTP 4.1.2.1.1.1)

           (2)   "NROWS" (IVTP 4.1.2.1.1.1)

           (3)   "PixelDepth" (IVTP 4.1.2.1.1.1)

C-15.2.2   Method Exceptions

       a.   Exception BadProductReference is raised when the array product reference is invalid. (IAS 3.2.5.9)

       b.   Exception BadRegionSpec is raised when one or more region_specs are invalid. (IAS 3.2.5.9))

       c.   Exception BadRegionData is raised when the data is unavailable in the appropriate compression. (IAS 3.2.5.9)

       d.   Exception BadRegionData is raised when the data is unavailable in the appropriate data format. (IAS 3.2.5.9)

e. Exception BadRegionData is raised when the data is unavailable in the appropriate resolution. (IAS 3.2.5.9)

f. Exception ArrayNotOpen is raised when the array product has not been previously opened by this client. (IAS 3.2.5.9)

g. Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.5.9)

C-15.2.3 **Parameters Interface.**

a. ProductCompression. Not used, data is uncompressed.

b. ProductDataFormat. Not used.

c. Optimize retrieval of RegionData based on HorizMotionRate and VertMotionRate. (IVTP 4.1.2.1.1.2)

d. SupportData. Not used.

C-15.3 **Data Requirements**. Data collection requirements are as follows:

a. **Criteria Related Data.**   Each region pixel data.

C-15.4 **Test Procedures**

a. **Data Collection.**   RegionData will be displayed on the client screen.

C-16   SUBTEST 16, CLIENT, GET_MULTIPLE_REGIONS()

C-16.1   Objective.   Determine to what extent the client can implement the get_multiple_regions method call.

C-16.2   Criteria

C-16.2.1   Method Functionality

         a.   The client provides the center x and y coordinates, the horizontal and vertical size, and the resolution level in the TileRegionSpec which is a specialization of the region_spec_list. (IAS 3.2.5.9, 3.1.1.14) (IVTP 4.1.2.1.1.1)

         b.   The list of RegionData is receives where the region_spec is the actual returned regions, the region_headers describes the region, and the region_data are the actual data. (IAS 3.2.5.9)

         c.   The region_header NameValueList contains the following entries and the value field is a string representation of the information:

                  (1)   "NCOLS" (IVTP 4.1.2.1.1.1)

                  (2)   "NROWS" (IVTP 4.1.2.1.1.1)

                  (3)   "PixelDepth" (IVTP 4.1.2.1.1.1)

C-16.2.2   Method Exceptions. The following exceptions are gracefully handled:

         a.   BadProductReference (IAS 3.2.5.9)

         b.   BadRegionSpec (IAS 3.2.5.9)

         c.   BadRegionData (IAS 3.2.5.9)

         d.   ArrayNotOpen (IAS 3.2.5.9)

         e.   BAD_INV_ORDER (IAS 3.2.5.9)

C-16.2.3   Parameters Interface.

         a.   ProductCompression. Not used, data is uncompressed.

b. ProductDataFormat. Not used.

c. The client provides an indication to the server of future region requests in the HorizMotionRate and VertMotionRate parameters. (IVTP 4.1.2.1.1.2)

d. SupportData. Not used.

C-16.3 **Data Requirements.** Data collection requirements are as follows:

a. **Criteria Related Data.** Each region pixel data.

C-16.4 **Test Procedures**

a. **Data Collection.** RegionData will be displayed on the client screen.

C-17   SUBTEST 17, SERVER, OPEN()

C-17.1   Objective.   Determine to what extent the server can implement the open method.

C-17.2   Criteria

C-17.2.1   Method Functionality

   a.   The server opens a connection from the client with valid user identity, "UserID" and password "Password". (IAS 3.2.1.1) (IVTP 4.1.2.1.1.1)

   b.   No other operations can be invoked prior to invocation of the open method. (IAS 3.2.1.1)

C-17.2.2   Method Exceptions

   a.   Exception AlreadyConnected is raised when there is already an established connection by the requesting client. (IAS 3.2.1.1)

   b.   Exception BadOpenCriteria is raised when the open criteria is not accepted by the server. (IAS 3.2.1.1)

   c.   Standard exception NO_PERMISSION is raised when the client has insufficient privileges to access the server. (IAS 3.2.1.1)

C-17.2.3   Parameters Interface.   None.

C-17.3   Data Requirements.   No additional data collection requirements are required.

C-17.4   Test Procedures.   No additional data collection requirements are required.

C-18   SUBTEST 18, CLIENT, OPEN()

C-18.1   Objective.   Determine to what extent the client can implement open the method call.

C-18.2   Criteria

C-18.2.1   Method Functionality

          a.   The client provides valid open_criteria containing user identity "UserID" and password "Password". (IVTP 4.1.2.1.1)

          b.   The client invokes no other operations prior to invocation of the open method. (IAS 3.2.1.1)

C-18.2.2   Method Exceptions. The following exceptions are gracefully handled:

          a.   AlreadyConnected (IAS 3.2.1.1)

          b.   BadOpenCriteria (IAS 3.2.1.1)

          c.   NO_PERMISSION (IAS 3.2.1.1)

C-18.2.3   Parameters Interface.   None.

C-18.3   Data Requirements.   No additional data collection requirements are required.

C-18.4   Test Procedures.   No additional data collection requirements are required.

C-19   SUBTEST 19, SERVER, CLOSE()

C-19.1   Objective.   Determine to what extent the server can implement the close method.

C-19.2   Criteria

C-19.2.1   Method Functionality

   a.   The server closes a connection from the client. (IAS 3.2.1.2)

   d.   No other operations can be invoked after invocation of the close method. (IAS 3.2.1.2)

C-19.2.2   Method Exceptions

   a.   Exception NoConnectionEstablished is raised when there has been no successful open operation on this server by this client. (IAS 3.2.1.2)

C-19.2.3   Parameters Interface.   None.

C-19.3   Data Requirements.   No additional data collection requirements are required.

C-19.4   Test Procedures.   No additional data collection requirements are required.

C-20   SUBTEST 20, CLIENT, CLOSE()

C-20.1   Objective.   Determine to what extent the client can implement the close method call.

C-20.2   Criteria

C-20.2.1   Method Functionality

> **a.**   The client requests to close a connection with the server.   (IAS 3.2.1.2)

> **b.**   The client calls no other operations after invocation of the close method.   (IAS 4.2.2.2)

C-20.2.2   Method Exceptions.   The following exception is gracefully handled:

> **a.**   NoConnectionEstablished   (IAS 3.2.1.2)

C-20.2.3   Parameters Interface.   None.

C-20.3   Data Requirements.   No additional data collection requirements are required.

C-20.4   Test Procedures.   No additional data collection requirements are required.

C-21   SUBTEST 21, SERVER, GET_PARAMETERS()

C-21.1   Objective.   Determine to what extent the server can implement get_parameters the method.

C-21.2   Criteria

C-21.2.1   Method Functionality

   a. The server provides a list of the requested parameters and associated values to the client. (IAS 3.2.2.1)

   b. ImageProduct interface will use the ContextInfo string to contain the user name and password in the form "username='USERID', password='PASSWORD'". (CIIP 4.1.2.1.1.2)

C-21.2.2   Method Exceptions

   a. Exception BadName is raised when one or more names in the name value list are invalid.   Details on which name(s) were invalid should be returned in ExecptionInfo. (IAS 3.2.2.1)

   b. Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.2.1)

C-21.2.3   Parameters Interface. The following parameters will be maintained by the server. In this case these parameters are those that are available and do not influence the operation of the get_parameters method.   They are listed here to show the applicable range, value or format.   The common IAS reference for this paragraph is 3.2.2.2.

   a. The Catalog Access server will provide in the ResultAttributes the current list of attributes to be returned by catalog queries. The list is a subset of attributes listed in the parameter AvailableAttributes.

   b. The Image Access, Catalog Access and Profile and Notification servers will provide in the GeographicDatum the current datum for that interface set to "WGS84". (IVTP 4.1.2.1.1.2)

   c. The Image Access server will provide in ProductRRDS the current requested reduced data set (RRDS) in the range 0-7. Multiple RRDS's may be requested in the sequence. (IAS 3.2.2.1) (IVTP 4.1.2.1.1.2)

d. The Image Access server will provide in RegionParameters the current requested region horizontal and vertical size and resolution level using the type RegionParameters. (IAS 3.2.2.1) (IVTP 4.1.2.1.1.2)

e. The Image Access server will provide in ProductCompression the current requested product compression scheme set to only one of the following:

    (1)   "UNC", "NITF20" only. (IVTP 4.1.2.1.1.2)

    (2)   "JPEG8", "NITF20" only. (IVTP 4.1.2.1.1.2)

    (3)   "JPEG12", "NITF20" only. (IVTP 4.1.2.1.1.2)

    (4)   "TFRD43", "TFRD" only. (IVTP 4.1.2.1.1.2)

f. The Image Access server will provide in ProductDataFormat the current requested file format for the product set to only one of the following:

    (1)   "NITF20". (IVTP 4.1.2.1.1.2)

    (2)   "TFRD".   (IVTP 4.1.2.1.1.2)

g. The Image Access server will provide in HorizMotionRate the current setting for future region requests in the horizontal direction. A positive value indicates increasing columns. Columns of the image increase from left to right. (IVTP 4.1.2.1.1.2)

h. The Image Access server will provide in VertMotionRate the current setting for future region requests in the vertical direction. A positive value indicates increasing rows. Rows of the image increase from top to bottom. (IVTP 4.1.2.1.1.2)

    i.   SupportData not used. (IVTP 4.1.2.1.1.1)

    j.   InterfacesSupported not used.

k. The Catalog Access server will provide in the AvailableAttributes a complete listing of the catalog attributes that are available in response to catalog queries.   (IVTP 4.1.2.1.1.3.1.1)

l.   The Catalog Access server will provide in the QueryableAttributes a complete listing of the queryable attributes supported by this catalog implementation.   The returned value field contains the supported query language operators separated by commas. (IAS 3.2.2.2) (IVTP 4.1.2.1.1.3.1.1)

m.   The Catalog Access server will provide in the MaxPolygonVertices the maximum number of vertices for the polygon supported by this catalog implementation.   Must be greater than or equal to 3. (IAS 3.1.2.1) (IVTP 4.1.2.1.1.2)

n.   The ImageProduct servers will provide in the ReferenceAttributes a list of the key attributes for the ImageProduct.   The list contains the following items in string format:

(1)   "NROWS". (IVTP 4.1.2.1.1.2)

(2)   "NCOLS". (IVTP 4.1.2.1.1.2)

o.   The server will provide in the ArrayProduct for an ImageProduct interface whether this product is available as an image array.   TRUE indicates the product is available as a array. (IVTP 4.1.2.1.1.2)

p.   The server will provide in the LibraryReference for an ImageProduct interface the IA object reference for the image product. (IVTP 4.1.2.1.1.2)

q.   The server will provide in the ParameterNames a list of all the parameters that are available in accordance with Table C-21.1. The value field will be TRUE for parameters that are resettable, and FALSE for read only parameters. (IVTP 4.1.2.1.1.2)

r.   The Catalog Access Facility and Profile and Notification Facility servers have parameter BrowseImageReturned set to indicate the retrieval of a browse image. True indicated retrieval of browse image and False indicated non-retrieval of browse image. (IAS 3.1.1.15) (IVTP 4.1.2.1.1.2)

Table C-21.1. Parameter Names

Parameter Name	IA	CA, PN	Image Product	Resettable
ArrayProduct			X	False
AvaliableAttributes		X		False
BrowseImageReturned		X		True
GeographicDatum	X	X		True
HorizMotionRate	X			True
InterfacesSupported				False
LibraryReference			X	False
MaxPolygonVertices		X		False
ParameterNames	X	X	X	False
ProductCompression	X			True
ProductDataFormat	X			True
ProductRRDS	X			True
QueryableAttributes		X		False
ReferenceAttributes			X	False
RegionParameters	X			True
ResultAttributes		X		True
SupportData				False
VertMotionRate	X			True

C-21.3   Data Requirements. No additional data collection requirements are required.

C-21.4   Test Procedures. No additional data collection requirements are required.

C-22   SUBTEST 22, CLIENT, GET_PARAMETERS()

C-22.1   Objective.   Determine to what extent the client can implement the get_parameters method call.

C-22.2   Criteria

C-22.2.1   Method Functionality

> **a.**   The client requests a list of parameters from the server. (IAS 3.2.2.1)

> **b.** The parameter names in the set: (IAS 3.2.2.2) (IVTP 4.1.2.1.1.2)

> > (1)   ResultAttributes

> > (2)   BrowseImageReturned

> > (3)   GeographicDatum

> > (4)   ProductRRDS

> > (5)   RegionParameters

> > (6)   ProductCompression

> > (7)   ProductDataFormat

> > (8)   InterfacesSupported, not used.

> > (9)   AvailableAttributes

> > (10)   QueryableAttributes

> > (11)   MaxPolygonVertices

> > (12)   ReferenceAttributes

> > (13)   ArrayProduct

> > (14)   LibraryReference

(15)   ParameterNames

(16)   SupportData, not used

    c.   ImageProduct interface will use the ContextInfo string to contain the user name and password in the form "username='USERID', password='PASSWORD'". (CIIP 4.1.2.1.1.2)

C-22.2.2   **Method Exceptions.** The following exceptions are gracefully handled:

    a.   BadName and details of which names are invalid are returned in the ExceptionInfo. (IAS 3.2.2.1)

    b.   BAD_INV_ORDER (IAS 3.2.2.1)

C-22.2.3   **Parameters Interface.** None.

C-22.3   **Data Requirements.**   No additional data collection requirements are required.

C-22.4   **Test Procedures.**   No additional data collection requirements are required.

C-23 SUBTEST 23, SERVER, SET_PARAMETERS()

C-23.1 Objective. Determine to what extent the server can implement the set_parameters method.

C-23.2 Criteria

C-23.2.1 Method Functionality

　　　a.　　The server must allow the client to change only values of client-specific parameters. (IAS 3.2.2.2)

　　　b.　　ImageProduct interface will use the ContextInfo string to contain the user name and password in the form "username='USERID', password='PASSWORD'" (CIIP 4.1.2.1.1.2)

C-23.2.2 Method Exceptions

　　　a.　　Exception BadName is raised when one or more names in the name value list are invalid. Details on which name(s) were invalid should be returned in ExecptionInfo. (IAS 3.2.2.2)

　　　b.　　Exception BadValue is raised when one or more values are not acceptable by the object implementation. (IAS 3.2.2.2)

　　　c.　　Exception CannotSet is raised when one or more parameters identified in the name value list are not resettable. (IAS 3.2.2.2)

　　　d.　　Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.2.2)

C-23.2.3 Parameters Interface. The following parameters will be changeable by the client. In this case these parameters are those that are changeable and do not influence the operation of the set_parameters method. The common IAS reference for this paragraph is IAS 3.2.2.2.

　　　a.　　The Catalog Access server will set the ResultAttributes to the list of attributes to be returned by catalog queries. The list is a subset of attributes listed in the parameter AvailableAttributes. (IVTP 4.1.2.1.1.2)

b. The Image Access, Catalog Access and Profile and Notification servers will set the GeographicDatum to the datum for the interface to "WGS84". (IVTP 4.1.2.1.1.2)

c. The Image Access server will provide in ProductRRDS the current requested reduced data set (RRDS) in the range 0-7. Multiple RRDS's may be requested in the sequence. (IVTP 4.1.2.1.1.2)

d. The Image Access server will set the RegionParameters the region horizontal and vertical size and resolution level using the type RegionParameters. (IAS 3.1.1.13) (IVTP 4.1.2.1.1.2)

e. The Image Access server will set the ProductCompression to one of the following:

    (1)   "UNC", "NITF20" only. (IVTP 4.1.2.1.1.2)

    (2)   "JPEG8", "NITF20" only. (IVTP 4.1.2.1.1.2)

    (3)   "JPEG12", "NITF20" only. (IVTP 4.1.2.1.1.2)

    (4)   "TFRD43", "TFRD" only. (IVTP 4.1.2.1.1.2)

f. The Image Access server will set the ProductDataFormat to only one of the following:

    (1)   "NITF20". (IVTP 4.1.2.1.1.2)

    (2)   "TFRD". (IVTP 4.1.2.1.1.2)

g. The Image Access server will set the HorizMotionRate to indicate future region requests in the horizontal direction. A positive value indicates increasing columns. Columns of the image increase from left to right. (IVTP 4.1.2.1.1.2)

h. The Image Access server will set the VertMotionRate to indicate future region requests in the vertical direction. A positive value indicates increasing rows. Rows of the image increase from top to bottom. (IVTP 4.1.2.1.1.2)

i. The Catalog Access Facility and Profile and Notification Facility servers have parameter BrowseImageReturned set to indicate the retrieval of a

browse image. True indicated retrieval of browse image and False indicated non-retrieval of browse image. (IAS 3.1.1.15) (IVTP 4.1.2.1.1.2)

C-23.3　　　**Data Requirements.** No additional data collection requirements are required.

C-23.4　　　**Test Procedures.** No additional data collection requirements are required.

C-24   SUBTEST 24, CLIENT, SET_PARAMETERS()

C-24.1   Objective.   Determine to what extent the client can implement the set_parameters method call.

C-24.2   Criteria

C-24.2.1   Method Functionality

     a.   The client requests the server to change a list of the client-specific parameters to the specified values. (IAS 3.2.2.1)

     b.   ImageProduct interface will use the ContextInfo string to contain the user name and password in the form "username='USERID', password='PASSWORD'" (CIIP 4.1.2.1.1.2)

C-24.2.2   Method Exceptions. The following exceptions are gracefully handled:

     a.   BadName and details of which names are invalid are returned in the ExceptionInfo. (IAS 3.2.2.2)

     b.   BadValue (IAS 3.2.2.2)

     c.   CannotSet (IAS 3.2.2.2)

     d.   BAD_INV_ORDER (IAS 3.2.2.2)

C-24.2.3   Parameters Interface. The following parameters will be changeable by the client. In this case these parameters are those that are changeable and do not influence the operation of the set_parameters method. The common IAS reference for this paragraph is IAS 3.2.2.2.

     a.   The client of the Catalog Access server will set the ResultAttributes to the list of attributes to be returned by catalog queries. The list is a subset of attributes listed in the parameter AvailableAttributes.   (IVTP 4.1.2.1.1.3.1.1)

     b.   The client of the Image Access and Catalog Access servers will set the GeographicDatum to the datum for the interface to "WGS84".   (IVTP 4.1.2.1.1.2)

c. The client of the Image Access server will provide in ProductRRDS the requested reduced data set (RRDS) in the range 0-7. Multiple RRDS's may be requested in the sequence. (IVTP 4.1.2.1.1.2)

d. The client of the Image Access server will set the RegionParameters the region horizontal and vertical size and resolution level using the type RegionParameters. (IAS 4.2.4.3) (IVTP 4.1.2.1.1.2)

e. The client of the Image Access server will set the ProductCompression to one of the following:

> (1) "UNC", "NITF20" only. (IVTP 4.1.2.1.1.2)

> (2) "JPEG8", "NITF20" only. (IVTP 4.1.2.1.1.2)

> (3) "JPEG12", "NITF20" only. (IVTP 4.1.2.1.1.2)

> (4) "TFRD43", "TFRD" only. (IVTP 4.1.2.1.1.2)

f. The client of the Image Access server will set the ProductDataFormat to only one of the following:

> (1) "NITF20". (IVTP 4.1.2.1.1.2)

> (2) "TFRD".   (IVTP 4.1.2.1.1.2)

g. The client of the Image Access server will set the HorizMotionRate to indicate future region requests in the horizontal direction. A positive value indicates increasing columns. Columns of the image increase from left to right. (IVTP 4.1.2.1.1.2)

h. The client of the Image Access server will set the VertMotionRate to indicate future region requests in the vertical direction. A positive value indicates increasing columns. Rows of the image increase from top to bottom. (IVTP 4.1.2.1.1.2)

i. The Catalog Access Facility and Profile and Notification Facility servers have parameter BrowseImageReturned set to indicate the retrieval of a browse image. True indicated retrieval of browse image and False indicated non-retrieval of browse image. (IAS 3.1.1.15) (IVTP 4.1.2.1.1.2)

C-24.3   **Data Requirements.**   No additional data collection requirements are required.

C-24.4   **Test Procedures.**   No additional data collection requirements are required.

C-25   SUBTEST 25, SERVER, GET_SUBIMAGE()

C-25.1   Objective.   Determine to what extent the server can implement the get_subimage method.

C-25.2   Criteria

C-25.2.1   Method Functionality

      a.   The server generates and transfers a whole image product that encompasses the specified bounding box from the specified image array product. If full coverage is not available, the produced image product may have partial coverage of the area. (IAS 3.2.5.5)

      b.   The upper_left parameter defines the north west corner of the bounding box geographic area. (IAS 3.2.5.5)

      c.   The lower_right parameter defines the south east corner of the bounding box geographic area. (IAS 3.2.5.5)

      d.   The location parameter defines the location to which the product is to be transferred. (IAS 3.2.5.5)

      e.   A valid unique RequestId is returned. (IAS 3.2.5.5)

C-25.2.2   Method Exceptions

      a.   Exception BadCoord is raised when one or more coordinates are unacceptable. $-180 <= $ Longitude $ <= +180$. $-90 <= $ Latitude $ <= +90$ (IAS 3.1.2.1)

      b.   Exception BadCoord is raised when no coverage of the bounding box is available from the image product. (IAS 3.1.2.1)

      c.   Exception BadProdctReference is raised when the product reference is invalid. (IAS 3.2.5.5)

      d.   Exception BadLocationSpec is raised when the location spec is syntactically invalid. (IAS 3.2.5.5)

      e.   Exception TooManyRequests is raised when the request exceeds the number of outstanding requests the server can support. (IAS 3.2.5.5)

f. Exception BadRegionData is raised when the data is unavailable in the requested format. (IAS 3.2.5.5)

g. Exception BadRegionData is raised when the data is unavailable in the requested compression. (IAS 3.2.5.5)

h. Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.5.5)

C-25.2.3   Parameters Interface

a. Generate subimage with the format specified by the ProductDataFormat parameter in the following:

(1)   NITF20. (IVTP 4.1.2.1.1.2)

(2)   TFRD. (IVTP 4.1.2.1.1.2)

b. Generate subimage with the format specified by the ProductCompression parameter in the following:

(1)   "UNC", "NITF20" only. (IVTP 4.1.2.1.1.2)

(2)   "JPEG8", "NITF20" only. (IVTP 4.1.2.1.1.2)

(3)   "JPEG12", "NITF20" only. (IVTP 4.1.2.1.1.2)

(4)   "TFRD43", "TFRD" only. (IVTP 4.1.2.1.1.2)

c. Generate subimage with resolutions, in the range 0-7, as requested in ProductRRDS. (IVTP 4.1.2.1.1.2)

d. Generate subimage with GeographicDatum set to "WGS84". (IVTP 4.1.2.1.1.2)

C-25.3   Data Requirements. No additional data collection requirements are required.

C-25.4   Test Procedures. No additional data collection requirements are required.

C-26   SUBTEST 26, CLIENT, GET_SUBIMAGE()

C-26.1   Objective.   Determine to what extent the client can implement the get_subimage method call.

C-26.2   Criteria

C-26.2.1   Method Functionality

      a.   The client requests transfer of a full image product from a portion of the specified image array product to the specified location.   (IAS 4.2.5.5)

      b.   The upper_left parameter defines the north west corner of the bounding box geographic area. (IAS 4.2.5.5)

      c.   The lower_right parameter defines the south east corner of the bounding box geographic area. (IAS 4.2.5.5)

      d.   The returned RequestIds can be used to monitor the progress of the request. (IAS 4.2.5.5)

C-26.2.2   Method Exceptions. The following exceptions are gracefully handled:

      a.   BadCoord (IAS 3.1.2.1)

      b.   BadProdctReference (IAS 3.1.2.1)

      c.   BadLocationSpec (IAS 4.2.5.5)

      d.   TooManyRequests (IAS 4.2.5.5)

      e.   BadRegionData (IAS 4.2.5.5)

      f.   BAD_INV_ORDER (IAS 4.2.5.5)

C-26.2.3   Parameters Interface

      a.   Request subimage with the format specified by the ProductDataFormat parameter as only one of the following: (IAS 4.2.5.5) (IVTP 4.1.2.1.1.2)

(1)   "NITF20".

(2)   "TFRD".

b.   Request subimage with the format specified by the ProductCompression parameter as only one of the following: (IAS 4.2.5.5) (IVTP 4.1.2.1.1.2)

(1)   "UNC", "NITF20" only.

(2)   "JPEG8", "NITF20" only.

(3)   "JPEG12", "NITF20" only.

(4)   "TFRD43", "TFRD" only.

c.   Request subimage with resolutions, in the range 0-7, in the ProductRRDS. (IAS 4.2.5.5) (IVTP 4.1.2.1.1.2)

d.   Request subimage with GeographicDatum set to "WGS84". (IAS 4.2.5.5) (IVTP 4.1.2.1.1.2)

C-26.3   **Data Requirements.**   No additional data collection requirements are required.

C-26.4   **Test Procedures.**   No additional data collection requirements are required.

C-27   SUBTEST 27, SERVER, BOOLEAN_QUERY()

C-27.1   Objective.   Determine to what extent the server can implement the Boolean_query method.

C-27.2   Criteria

C-27.2.1   Method Functionality

    a.   The server returns a valid QueryId which when used with the get_results method returns data that meets the criteria specified in the Boolean query expression. (IAS 3.2.6.1, IAS 3.2.6.5)

C-27.2.2   Method Exceptions

    a.   Exception BadQuerySyntax is raised when the BQS query has illegal syntax. (IAS 3.2.6.1)

    b.   Exception BadQuerySyntax is raised when an improper operation is applied to a queryable attribute. (IAS 3.2.6.1)

    c.   Exception BadAttribute is raised when the query expression contains an unknown or non-queryable attribute. (IAS 3.2.6.1)

    d.   Exception BadQueryValue is raised when the query expression contains an invalid literal-constant value. (IAS 3.2.6.1)

    e.   Exception TooManyRequests is raised when the server has exceeded an implementation limit for the number of simultaneous queries. (IAS 3.2.6.1)

    f.   Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.6.1)

C-27.2.3   Parameters Interface

    a.   Parameter ResultAttributes specifies which available attributes are returned to the client when the QueryResults are retrieved. (IAS 3.2.2.2) (IVTP 4.1.2.1.1.2)

    b.   Parameter BrowseImageReturned is set to indicate the retrieval of a browse image. (IAS 3.2.2.2)

C-27.3   **Data Requirements.**   Data collection requirements are as follows:

     a.   **Criteria Related Data.**   Query results.

C-27.4   **Test Procedures**

     a.   **Data Collection.**   Query results will be collected from the client output.

C-28 **SUBTEST 28, CLIENT, BOOLEAN_QUERY()**

C-28.1 **Objective.** Determine to what extent the client can implement the Boolean_query method call.

C-28.2 **Criteria**

C-28.2.1 **Method Functionality**

a. The client provides to the server a valid Boolean query expression. (IAS 3.2.6.1) (IVTP 4.1.2.1.1.3.1.1)

b. The received QueryId is used by the get_results to retrieve the data that meets the query. (IAS 3.2.6.1, IAS 3.2.6.5)

C-28.2.2 **Method Exceptions.** The following exceptions are gracefully handled:

a. BadQuerySyntax (IAS 3.2.6.1)

b. BadAttribute (IAS 3.2.6.1)

c. BadQueryValue (IAS 3.2.6.1)

d. TooManyRequests (IAS 3.2.6.1)

e. BAD_INV_ORDER (IAS 3.2.6.1)

C-28.2.3 **Parameters Interface**

a. The parameter ResultAttributes specifies which attributes are to be returned to the client when the QueryResults are retrieved. (IAS 3.2.2.2) (IVTP 4.1.2.1.1.2)

b. Parameter BrowseImageReturned is set to indicate the retrieval of a browse image. (IAS 3.2.2.2)

C-28.3 **Data Requirements.** Data collection requirements are as follows:

a. **Criteria Related Data.** Query results.

C-28.4 **Test Procedures**

a.	**Data Collection.** Query results will be collected from the client output.

C-29　　　SUBTEST 29, SERVER, POLYGONAL_QUERY()

C-29.1　　Objective. Determine to what extent the server can implement the polygonal_query method.

C-29.2　　Criteria

C-29.2.1　　Method Functionality

　　a.　　The server returns a valid QueryId which when used with the get_results method returns data that meets the criteria specified in the Boolean query expression and overlaps any part of the polygon. (IAS 3.2.6.2, IAS 3.2.6.5) (IVTP 4.1.2.1.1.3.1.1)

　　b.　　The polygon must be a single enclosed area. (IAS 3.2.6.2)

　　c.　　The polygon vertices must be ordered in a counterclockwise direction. (IAS 3.2.6.2)

C-29.2.2　　Method Exceptions

　　a.　　Exception BadQuerySyntax is raised when the BQS query has illegal syntax. (IAS 3.2.6.2)

　　b.　　Exception BadQuerySyntax is raised when an improper operation is applied to a queryable attribute. (IAS 3.2.6.2)

　　c.　　Exception BadAttribute is raised when the query expression contains an unknown or non-queryable attribute. (IAS 3.2.6.2)

　　d.　　Exception BadQueryValue is raised when the query expression contains an invalid literal-constant value. (IAS 3.2.6.2)

　　e.　　Exception TooManyRequests is raised when the server has exceeded an implementation limit for the number of simultaneous queries. (IAS 3.2.6.2)

　　f.　　Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.6.2)

　　g.　　Exception BadCoord is raised when one or more of the coordinates are invalid. (IAS 3.2.6.2)

h. Exception TooFewVertices is raised when less than 3 vertices are used. (IAS 3.2.6.2)

i. Exception TooManyVertices is raised when the implementation defined maximum defined vertices are exceeded (parameter MaxPolygonVertices). (IAS 3.2.6.2)
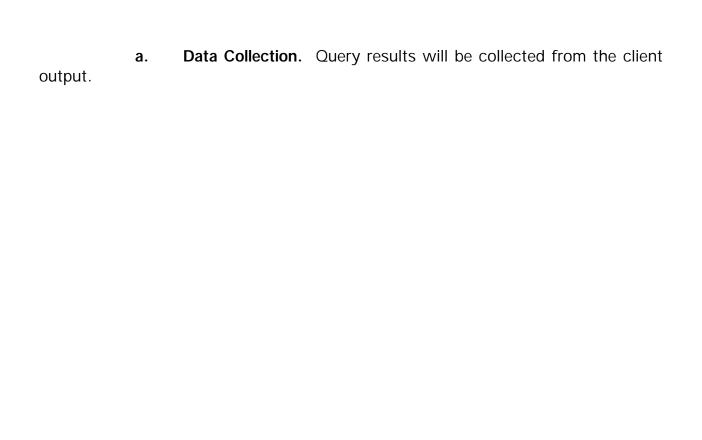
C-29.2.3 Parameters Interface

a. Parameter ResultAttributes specifies which available attributes are returned to the client when the QueryResults are retrieved. (IAS 3.2.2.2) (IVTP 4.1.2.1.1.2)

b. Parameter GeographicDatum is set to "WGS84". (IVTP 4.1.2.1.1.2)

c. Parameter BrowseImageReturned is set to indicate the retrieval of a browse image. (IAS 3.2.2.2)

C-29.3 Data Requirements. Data collection requirements are as follows:

a. Criteria Related Data. Query results.

C-29.4 Test Procedures

a. Data Collection. Query results will be collected from the client presentation.

C-30   SUBTEST 30, CLIENT, POLYGONAL_QUERY()

C-30.1   Objective.   Determine to what extent the client can implement the polygonal_query method call.

C-30.2   Criteria

C-30.2.1   Method Functionality

    a.   The client provides to the server a valid Boolean query expression and polygon. (IAS 3.2.6.2) (IVTP 4.1.2.1.1.3.1.1)

    b.   The received QueryId is used by the get_results to retrieve the data that meets the query and overlaps any part of the polygon. (IAS 3.2.6.2, IAS 3.2.6.5)

    c.   The polygon must be a single enclosed area. (IAS 3.2.6.2)

    d.   The polygon must have from 3 to MaxPolygonVertices vertices. (IAS 3.2.6.2, 3.2.2.2)

    e.   The polygon vertices must be ordered in a counterclockwise direction. (IAS 3.2.6.2)

C-30.2.2   Method Exceptions. The following exceptions are gracefully handled:

    a.   BadQuerySyntax (IAS 3.2.6.2)

    b.   BadAttribute (IAS 3.2.6.2)

    c.   BadQueryValue (IAS 3.2.6.2)

    d.   TooManyRequests (IAS 3.2.6.2)

    e.   BAD_INV_ORDER   (IAS 3.2.6.2)

    f.   BadCoord (IAS 3.2.6.2)

    g.   TooFewVertices (IAS 3.2.6.2)

    h.   TooManyVertices (IAS 3.2.6.2)

C-30.2.3   Parameters Interface

        a.   The parameter ResultAttributes specifies which attributes are to be returned to the client when the QueryResults are retrieved. (IAS 3.2.2.2) (IVTP 4.1.2.1.1.2)

        b.   Parameter GeographicDatum is set to "WGS84".   (IVTP 4.1.2.1.1.2)

        c.   Parameter BrowseImageReturned is set to indicate the retrieval of a browse image. (IAS 3.2.2.2)

C-30.3   Data Requirements. Data collection requirements are as follows:

        a.   **Criteria Related Data.** Query results.

C-30.4   Test Procedures

        a.   **Data Collection.** Query results will be collected from the client presentation.

C-31   SUBTEST 31, SERVER, ELLIPTICAL_QUERY()

C-31.1   Objective.   Determine to what extent the server can implement elliptical_query the method.

C-31.2   Criteria

C-31.2.1   Method Functionality

      a.   The server returns a valid QueryId which when used with the get_results method returns data that meets the criteria specified in the Boolean query expression and overlaps any part of the ellipse. (IAS 3.2.6.3, IAS 3.2.6.5) (IVTP 4.1.2.1.1.3.1.1)

      b.   The azimuth is measured clockwise from north of the major axis in degrees. (IAS 3.2.6.3)

      c.   The major and minor axis are measured in meters. (IAS 3.2.6.3)

      d.   A circle query is generated when the major and minor axis are equal. (IAS 3.2.6.3)

C-31.2.2   Method Exceptions.

      a.   Exception BadQuerySyntax is raised when the BQS query has illegal syntax. (IAS 3.2.6.3)

      b.   Exception BadQuerySyntax is raised when an improper operation is applied to a queryable attribute. (IAS 3.2.6.3)

      c.   Exception BadAttribute is raised when the query expression contains an unknown or non-queryable attribute. (IAS 3.2.6.3)

      d.   Exception BadQueryValue is raised when the query expression contains an invalid literal-constant value. (IAS 3.2.6.3)

      e.   Exception TooManyRequests is raised when the server has exceeded an implementation limit for the number of simultaneous queries. (IAS 3.2.6.3)

      f.   Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.6.3)

g. Exception BadCoord is raised when one or more of the coordinates are invalid. (IAS 3.2.6.3)

h. Exception BadEllipse is raised when axis or azimuth arguments are invalid. (IAS 3.2.6.3)

C-31.2.3   Parameters Interface

a. Parameter ResultAttributes specifies which available attributes are returned to the client when the QueryResults are retrieved.   (IAS 3.2.2.2) (IVTP 4.1.2.1.1.2)

b. Parameter GeographicDatum is set to "WGS84".   (IVTP 4.1.2.1.1.2)

c. Parameter BrowseImageReturned is set to indicate the retrieval of a browse image. (IAS 3.2.2.2)

C-31.3   Data Requirements. Data collection requirements are as follows:

a.   Criteria Related Data. Query results.

C-31.4   Test Procedures

a.   Data Collection. Query results will be collected from the client presentation.

C-32   SUBTEST 32, CLIENT, ELLIPTICAL_QUERY()

C-32.1   Objective. Determine to what extent the client can implement the elliptical_query method call.

C-32.2   Criteria

C-32.2.1   Method Functionality

      a.   The client provides to the server a valid Boolean query expression and ellipse. (IAS 3.2.6.3) (IVTP 4.1.2.1.1.3.1.1)

      b.   The received QueryId is used by the get_results to retrieve the data that meets the query and overlaps any part of the ellipse. (IAS 3.2.6.3, IAS 3.2.6.5)

      c.   The azimuth is measured clockwise from north of the major axis in degrees. (IAS 3.2.6.3)

      d.   The major and minor axis are measured in meters. (IAS 3.2.6.3)

      e.   A circle query is generated when the major and minor axis are equal. (IAS 3.2.6.3)

C-32.2.2   Method Exceptions. The following exceptions are gracefully handled:

      a.   BadQuerySyntax (IAS 3.2.6.3)

      b.   BadAttribute (IAS 3.2.6.3)

      c.   BadQueryValue (IAS 3.2.6.3)

      d.   TooManyRequests (IAS 3.2.6.3)

      e.   BAD_INV_ORDER (IAS 3.2.6.3)

      f.   BadCoord (IAS 3.2.6.3)

      g.   BadEllipse (IAS 3.2.6.3)

C-32.2.3   Parameters Interface

a. The parameter ResultAttributes specifies which attributes are to be returned to the client when the QueryResults are retrieved. (IAS 3.2.6.5) (IVTP 4.1.2.1.1.2)

b. Parameter GeographicDatum is set to "WGS84". (IVTP 4.1.2.1.1.2)

c. Parameter BrowseImageReturned is set to indicate the retrieval of a browse image. (IAS 3.2.2.2)

C-32.3 **Data Requirements.** Data collection requirements are as follows:

a. **Criteria Related Data.** Query results.

C-32.4 **Test Procedures**

a. **Data Collection.** Query results will be collected from the client presentation.

C-33   SUBTEST 33, SERVER, POINT_QUERY()

C-33.1   Objective.   Determine to what extent the server can implement the point_query method.

C-33.2   Criteria

C-33.2.1   Method Functionality

     a.   The server returns a valid QueryId which when used with the get_results method returns data that meets the criteria specified in the Boolean query expression and provide coverage of the geographic point. (IAS 3.2.6.4, IAS 3.2.6.5) (IVTP 4.1.2.1.1.3.1.1)

C-33.2.2   Method Exceptions

     a.   Exception BadQuerySyntax is raised when the BQS query has illegal syntax. (IAS 3.2.6.4)

     b.   Exception BadQuerySyntax is raised when an improper operation is applied to a queryable attribute. (IAS 3.2.6.4)

     c.   Exception BadAttribute is raised when the query expression contains an unknown or non-queryable attribute. (IAS 3.2.6.4)

     d.   Exception BadQueryValue is raised when the query expression contains an invalid literal-constant value. (IAS 3.2.6.4)

     e.   Exception TooManyRequests is raised when the server has exceeded an implementation limit for the number of simultaneous queries. (IAS 3.2.6.4)

     f.   Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.6.4)

     g.   Exception BadCoord is raised when the coordinate is invalid. (IAS 3.2.6.4)

C-33.2.3   Parameters Interface

a. Parameter ResultAttributes specifies which available attributes are returned to the client when the QueryResults are retrieved. (IAS 3.2.2.2) (IVTP 4.1.2.1.1.2)

b. Parameter GeographicDatum is set to "WGS84". (IVTP 4.1.2.1.1.2)

c. Parameter BrowseImageReturned is set to indicate the retrieval of a browse image. (IAS 3.2.2.2)

C-33.3 **Data Requirements.** Data collection requirements are as follows:

a. **Criteria Related Data.** Query results.

C-33.4 **Test Procedures**

a. **Data Collection.** Query results will be collected from the client presentation.

C-34   SUBTEST 34, CLIENT, POINT_QUERY()

C-34.1   Objective.   Determine to what extent the client can implement the point_query method call.

C-34.2   Criteria

C-34.2.1   Method Functionality

   a.   The client provides to the server a valid Boolean query expression and geographic point. (IAS 3.2.6.4) (IVTP 4.1.2.1.1.3.1.1)

   b.   The received QueryId is used by the get_results to retrieve the data that meets the query and provide coverage of the geographic point. (IAS 3.2.6.4, IAS 3.2.6.5)

C-34.2.2   Method Exceptions. The following exceptions are gracefully handled:

   a.   BadQuerySyntax (IAS 3.2.6.4)

   b.   BadAttribute   (IAS 3.2.6.4)

   c.   BadQueryValue   (IAS 3.2.6.4)

   d.   TooManyRequests   (IAS 3.2.6.4)

   e.   BAD_INV_ORDER . (IAS 3.2.6.4)

   f.   BadCoord (IAS 3.2.6.4)

C-34.2.3   Parameters Interface

   a.   The parameter ResultAttributes specifies which attributes are to be returned to the client when the QueryResults are retrieved. (IAS 3.2.2.2) (IVTP 4.1.2.1.1.2)

   b.   Parameter GeographicDatum is set to "WGS84".   (IVTP 4.1.2.1.1.2)

   c.   Parameter BrowseImageReturned is set to indicate the retrieval of a browse image. (IAS 3.2.2.2)

C-34.3 **Data Requirements**. Data collection requirements are as follows:

a. **Criteria Related Data**. Query results.

C-34.4 **Test Procedures**

a. **Data Collection**. Query results will be collected from the client presentation.

C-35   SUBTEST 35, SERVER, GET_RESULTS()

C-35.1   Objective.   Determine to what extent the server can implement the get_results method.

C-35.2   Criteria

C-35.2.1   Method Functionality

     a.   The QueryId is used to specify which results are to be retrieved. (IAS 3.2.6.5)

     b.   The maximum number of hits returned by the server is specified by the client in the formal parameter number_hits_to_return. (IAS 3.2.6.5)

     c.   The product reference for each found product is returned. (IAS 3.1.1.15) (IVTP 4.1.2.1.1.2)

     d.   The returned attributes are in character form. (IAS 3.1.1.15)

     e.   The returned attributes in the QueryHit and the attribute names in the QueryResults are in the same order. (IAS 3.1.1.15)

     f.   If the browse_image is returned, it will be contained in a RegionData structure.   The region_spec member will be nil. The image will be 1024x1024 or 256x256 pixels, and a pixel depth of 8 bits. (IVTP 4.1.2.1.1.3)

     g.   If the query is complete and there are not sufficient records to fill the number_hits_to_return, only those remaining hits are returned. (IAS 3.2.6.5)

C-35.2.2   Method Exceptions

     a.   Exception BadQueryId is raised when QueryId is invalid. (IAS 3.2.6.5)

     b.   Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.6.5)

     C-35.2.3   Parameters Interface. None.

C-35.3   Data Requirements. Data collection requirements are as follows:

        a.   **Criteria Related Data.** Query results.

C-35.4   **Test Procedures**

        a.   **Data Collection.** Query results will be collected from the client presentation.

C-36   SUBTEST 36, CLIENT, GET_RESULTS()

C-36.1   Objective.   Determine to what extent the client can implement the get_results method call.

C-36.2   Criteria

C-36.2.1   Method Functionality

      a.   The QueryId is used to specify which results are to be retrieved. (IAS 3.2.6.5)

      b.   The maximum number of hits to be returned by the server is specified by in number_hits_to_return. (IAS 3.2.6.5)

      c.   The get_results method may be called until all hits have been returned by the server. (IAS 3.2.6.5)

      d.   The product reference for each found product returned can be used to for accessing the image product through operations provided by the Image Access Facility. (IAS 3.1.1.15) (IVTP 4.1.2.1.1.2)

      e.   The attributes are received in character form. (IAS 3.1.1.15)

      f.   The returned attributes in the QueryHit and the attribute names in the QueryResults are correlated in the same order. (IAS 3.1.1.15)

      g.   If the browse_image is returned, it will be contained in a RegionData structure.   The region_spec member will be nil. The image will be 1024x1024 or 256x256 pixels, and a pixel depth of 8 bits. (IVTP 4.1.2.1.1.3)

      h.   The client will know all the results are retrieved when the returned query hits are less than the number_hits_to_return, only those remaining hits are returned. (IAS 3.2.6.5)

C-36.2.2   Method Exceptions. The following exceptions are gracefully handled:

      a.   BadQueryId (IAS 3.2.6.5)

      b.   BAD_INV_ORDER   (IAS 3.2.6.5)

      C-36.2.3   Parameters Interface. None.

C-36.3   **Data Requirements.** Data collection requirements are as follows:

        a.   **Criteria Related Data.** Query results.

C-36.4   **Test Procedures**

        a.   **Data Collection.** Query results will be collected from the client presentation.

C-37   SUBTEST 37, SERVER, CA FREE_RESULTS()

C-37.1   Objective. Determine to what extent the server can implement the CA free_results method.

C-37.2   Criteria

C-37.2.1   Method Functionality

a.   The QueryId specifies which QueryResults to free.   (IAS 3.2.6.6)

b.   Any remaining query hits for that QueryId are no longer accessible. (IAS 3.2.6.6)

C-37.2.2   Method Exceptions

a.   Exception BadQueryId is raised when QueryId is invalid. (IAS 3.2.6.6)

b.   Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.6.6)

C-37.2.3   Parameters Interface. None.

C-37.3   Data Requirements. No additional data collection requirements are required.

C-37.4   Test Procedures. No additional data collection requirements are required.

C-38 **SUBTEST 38, CLIENT, CA FREE_RESULTS()**

C-38.1 **Objective.** Determine to what extent the client can implement the CA free_results method call.

C-38.2 **Criteria**

C-38.2.1 **Method Functionality**

a. The QueryId specifies which QueryResults to free. (IAS 3.2.6.6)

C-38.2.2 **Method Exceptions.** The following exceptions are gracefully handled:

a. BadQueryId (IAS 3.2.6.6)

b. BAD_INV_ORDER (IAS 3.2.6.6)

C-38.2.3 **Parameters Interface.** None.

C-38.3 **Data Requirements.** No additional data collection requirements are required.

C-38.4 **Test Procedures.** No additional data collection requirements are required.

C-39　　　SUBTEST 39, SERVER, P&NF STANDING QUERIES

C-39.1　　Objective. Determine to what extent the server can maintain standing queries and QueryResults for an indefinite time

C-39.2　　Criteria

C-39.2.1　　Method Functionality

　　　a.　　The Boolean_query functionality remains the same as defined for the Catalog Access Facility, but the QueryId is valid for an indefinite time, i.e. across connection sessions. (IAS 3.2.7)

　　　b.　　The polygonal_query functionality remains the same as defined for the Catalog Access Facility, but the QueryId is valid for an indefinite time, i.e. across connection sessions. (IAS 3.2.7)

　　　c.　　The elliptical_query functionality remains the same as defined for the Catalog Access Facility, but the QueryId is valid for an indefinite time, i.e. across connection sessions. (IAS 3.2.7)

　　　d.　　The point_query functionality remains the same as defined for the Catalog Access Facility, but the QueryId is valid for an indefinite time, i.e. across connection sessions. (IAS 3.2.7)

　　　e.　　The results from any P&NF query are persistent until free_results or remove_query are called for the associated QueryId. (IAS 3.2.7)

C-39.2.2　　Method Exceptions. Same as query methods in the Catalog Access Facility.

C-39.2.3　　Parameters Interface. Same as query methods in the Catalog Access Facility.

C-39.3　　Data Requirements. Data collection requirements are as follows:

　　　a.　　Criteria Related Data. Query results.

C-39.4　　Test Procedures

　　　a.　　Data Collection. Query results will be collected from the client presentation.

C-40   **SUBTEST 40, CLIENT, P&NF STANDING QUERIES**

C-40.1   **Objective.** Determine to what extent the client can access standing results.

C-40.2   **Criteria**

C-40.2.1   **Method Functionality**

     a.   The client Boolean_query call remains the same as defined for the Catalog Access Facility and submits a standing query. (IAS 3.2.7)

     b.   The client polygonal_query call remains the same as defined for the Catalog Access Facility and submits a standing query. (IAS 3.2.7)

     c.   The client elliptical_query call remains the same as defined for the Catalog Access Facility and submits a standing query. (IAS 3.2.7)

     d.   The client point_query call remains the same as defined for the Catalog Access Facility and submits a standing query. (IAS 3.2.7)

     e.   The received QueryId is used by the get_results to retrieve the data that meets the query. (IAS 3.2.6.5)

C-40.2.2   **Method Exceptions.** Same as query methods in the Catalog Access Facility.

C-40.2.3   **Parameters Interface.** Same as query methods in the Catalog Access Facility.

C-40.3   **Data Requirements.** Data collection requirements are as follows:

     a.   **Criteria Related Data.** Query results.

C-40.4   **Test Procedures**

     a.   **Data Collection.** Query results will be collected from the client presentation.

C-41   SUBTEST 41, SERVER, P&NF FREE_RESULTS()

C-41.1   Objective.   Determine to what extent the server can implement the P&NF free_results method.

C-41.2   Criteria

C-41.2.1   Method Functionality

   a.   The server removes, from an associated QueryId, only QueryResults that have been previously been retrieved by the client. (IAS 3.2.7)

C-41.2.2   Method Exceptions

   a.   Exception BadQueryId is raised when QueryId is invalid. (IAS 3.2.7.2)

   b.   Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.7.2)

C-41.2.3   Parameters Interface.   None.

C-41.3   Data Requirements.   No additional data collection requirements are required.

C-41.4   Test Procedures.   No additional data collection requirements are required.

C-42　　　SUBTEST 42, CLIENT, P&NF FREE_RESULTS()

C-42.1　　Objective.　Determine to what extent the client can implement the P&NF free_results method call.

C-42.2　　Criteria

C-42.2.1　　Method Functionality

　　　　　a.　　The client specifies which QueryId to delete the results that have been previously retrieved.　(IAS 3.2.7)

C-42.2.2　　Method Exceptions.　　The following exceptions are gracefully handled:

　　　　　a.　BadQueryId　(IAS 3.2.7.2)

　　　　　b.　BAD_INV_ORDER　(IAS 3.2.7.2)

C-42.2.3　　Parameters Interface.　None.

C-42.3　　Data Requirements.　No additional data collection requirements are required.

C-42.4　　Test Procedures.　No additional data collection requirements are required.

C-43   SUBTEST 43, SERVER, LIST_QUERIES()

C-43.1   Objective. Determine to what extent the server can implement the list_queries method.

C-43.2   Criteria

C-43.2.1   Method Functionality

    a.   A list of all standing QueryIds for this client are returned. (IAS 3.2.7.1)

    b.   The new_results member is set to TRUE if there are any unretrieved results for that QueryId. (IAS 3.2.7.1)

C-43.2.2   Method Exceptions

    a.   Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.7.1)

C-43.2.3   Parameters Interface. None.

C-43.3   Data Requirements. Data collection requirements are as follows:

    a.   **Criteria Related Data.** A listing of standing queries.

C-43.4   Test Procedures

    a.   **Data Collection.** A listing of QueryResults will be collected from the client presentation.

C-44   SUBTEST 44, CLIENT, LIST_QUERIES()

C-44.1   Objective.   Determine to what extent the client can implement the list_queries method call.

C-44.2   Criteria

C-44.2.1   Method Functionality

      a.   A list of all standing QueryIds are received. (IAS 3.2.7.1)

      b.   The new_results member is set to TRUE if there are any unretrieved results for that QueryId. (IAS 3.2.7.1)

      c.   The client maintains any correlation between the QueryId and the details of the query. (IAS 3.2.7.1)

C-44.2.2   Method Exceptions.   The following exceptions are gracefully handled:

      a.   BAD_INV_ORDER (IAS 3.2.7.1)

C-44.2.3   Parameters Interface.   None.

C-44.3   Data Requirements.   Data collection requirements are as follows:

      a.   **Criteria Related Data.**   A listing of standing queries.

C-44.4   Test Procedures

      a.   **Data Collection.**   A listing of QueryResults will be collected from the client presentation.

C-45   SUBTEST 45, SERVER, REMOVE_QUERY()

C-45.1   Objective.   Determine to what extent the server can implement the remove_query method.

C-45.2   Criteria

C-45.2.1   Method Functionality

          a.   The query and QueryResults associated with the associated QueryId are canceled. (IAS 3.2.7.2)

C-45.2.2   Method Exceptions

          a.   Exception BadQueryId is raised when there is no standing query for that QueryId. (IAS 3.2.7.2)

          b.   Standard exception BAD_INV_ORDER is raised when the server has not been successfully opened prior to this method being used. (IAS 3.2.7.2)

C-45.2.3   Parameters Interface.   None.

C-45.3   Data Requirements.   No additional data collection requirements are required.

C-45.4   Test Procedures.   No additional data collection requirements are required.

C-46 SUBTEST 46, CLIENT, REMOVE_QUERY()

C-46.1 Objective. Determine to what extent the client can implement the remove_query method call.

C-46.2 Criteria

C-46.2.1 Method Functionality

a. The client requests cancellation of the specified QueryId. (IAS 3.2.7.2)

C-46.2.2 Method Exceptions. The following exceptions are gracefully handled:

a. BadQueryId (IAS 3.2.7.2)

b. BAD_INV_ORDER (IAS 3.2.7.2)

C-46.2.3 Parameters Interface. None.

C-46.3 Data Requirements. No additional data collection requirements are required.

C-46.4 Test Procedures. No additional data collection requirements are required.

C-47   SUBTEST 47, SERVER, REQUEST_NOTIFY()

C-47.1   Objective.   Determine to what extent the server can implement the request_notify method.

C-47.2   Criteria

C-47.2.1   Method Functionality

       a.   If the callback_objectref is not NULL, the server notifies the client if any new products matching the standing QueryId using the notify method on the callback_objectref. (IAS 3.2.7.3)

       b.   If the email_address is not NULL, the server notifies the client if any new products matching the standing QueryId by sending the client an E-mail message describing those hits. (IAS 3.2.7.3)

C-47.2.2   Method Exceptions

       a.   Exception BadQueryId is raised when there is no standing query for that QueryId. (IAS 3.2.7.3)

       b.   Exception BadEmailAddress is raised when there is an invalid Email address. (IAS 3.2.7.3)

       c.   Exception BAD_PARAM is raised when both callback_objectref and email_address are NULL. (IAS 3.2.7.3)

       d.   Exception INV_OBJREF is raised when the callback_objectref is invalid. (IAS 3.2.7.3)

C-47.2.3   Parameters Interface.   None.

C-47.3   Data Requirements.   No additional data collection requirements are required.

C-47.4   Test Procedures.   No additional data collection requirements are required.

C-48   SUBTEST 48, CLIENT, REQUEST_NOTIFY()

C-48.1   Objective.   Determine to what extent the client can implement the request_notify method call.

C-48.2   Criteria

C-48.2.1   Method Functionality

      a.   The client requests notification of any new products matching the specified QueryId using the specified callback_objectref notify method of the PNF_Callback interface. The PNF_Callback notify method must be implemented by the client. (IAS 3.2.7.3)

      b.   If the email_address is not NULL, the server notifies the client if any new products match the standing query by sending the client an E-mail message describing those hits. (IAS 3.2.7.3)

      c.   Either the callback_objectref or the email_address parameter may be NULL indicating the client does not wish to be notified by that mode, but both cannot be NULL. (IAS 3.2.7.3)

C-48.2.2   Method Exceptions. The following exceptions are gracefully handled:

      a.   BadQueryId (IAS 3.2.7.3)

      b.   BadEmailAddress (IAS 3.2.7.3)

      c.   BAD_PARAM (IAS 3.2.7.3)

      d.   INV_OBJREF (IAS 3.2.7.3)

C-48.2.3   Parameters Interface. None.

C-48.3   Data Requirements.   No additional data collection requirements are required.

C-48.4   Test Procedures.   No additional data collection requirements are required.

C-49 **SUBTEST 49, SERVER, REQUEST_PUSH().** Method deleted from specification.

C-50 **SUBTEST 50, SERVER, REQUEST_PUSH().** Method deleted from specification.

C-51   SUBTEST 51, SERVER, NOTIFY()

C-51.1   Objective.   Determine to what extent the server can implement the notify method call.

C-51.2   Criteria

C-51.2.1   Method Functionality

        a.   The server calls the notify method when there are new hits on the clients specified standing query. (IAS 3.2.8.1)

        b.   The server supplies the query_results which contains the hits for the specified QueryId. (IAS 3.2.8.1)

C-51.2.2   Method Exceptions. None.

C-51.2.3   Parameters Interface. None.

C-51.3   Data Requirements. Data collection requirements are as follows:

        a.   **Criteria Related Data.** Query results.

C-51.4   Test Procedures

        a.   **Data Collection.** Query results will be collected from the client presentation.

C-52   **SUBTEST 52, CLIENT, NOTIFY()**

C-52.1   **Objective.**   Determine to what extent the client can implement the notify method.

C-52.2   **Criteria**

C-52.2.1   **Method Functionality**

       a.   The client receives the notify call. (IAS 3.2.8.1)

       b.   The client maintains any correlation between the QueryId and the details of the query. (IAS TBD)

C-52.2.2   **Method Exceptions.** None.

C-52.2.3   **Parameters Interface.** None.

C-52.3   **Data Requirements.** Data collection requirements are as follows:

       a.   **Criteria Related Data.** Query results.

C-52.4   **Test Procedures**

       a.   **Data Collection.** Query results will be collected from the client presentation.

C-53   **SUBTEST 53, SERVER, PUSH().** Method deleted from specification.

C-54   **SUBTEST 54, CLIENT, PUSH().** Method deleted from specification.

C-55   SUBTEST 55, BOOLEAN QUERY SYNTAX

C-55.1   Objective. Determine to what extent the client can generate Boolean Queries Syntax string and the server can interpret the Boolean Queries Syntax string.

C-55.2   Criteria

C-55.2.1   Method Functionality

      a.   A boolean query string is composed of the following:

      (1)   Product Expression is in the form of 2 or more Sum Expressions or Relation Expressions ANDed together. (IAS 5.4)

      (2)   Sum Expression is in the form of 2 or more Relation Expressions ORed together and enclosed in parentheses. All ORed expressions are use the same attribute and the operators are limited to: $=$, $<>$, like, not like. (IAS 5.4)

      (3)   Relation Expression is in the form of an attribute, operator, and constant. (IAS 5.4) (IVTP 4.1.2.1.1.3.1.1)

      b.   Operators are constrained as follows: (IAS 5.3)

      (1)   Numeric operators: $=$, $<>$, $>=$, $<=$, $>$, $<$.

      (2)   String operators: like, not like.

      c.   Constants

      (1)   Numeric constants are: integers and floating point numbers. (IAS 5.4)

      (2)   Constant strings are enclosed in single quote characters. (IAS 5.3)

      (3)   The wildcard character %, within string constants, matches 0 or more characters. (IAS 5.3)

C-55.2.2   Method Exceptions. Not applicable.

C-55.2.3   **Parameters Interface.** Not applicable.

C-55.3   **Data Requirements.** Data collection requirements are as follows:

      a.   **Criteria Related Data**

          (1)   Query string.

          (2)   Query results.

C-55.4   **Test Procedures**

      a.   **Data Collection**

          (1)   Query results will be collected from the server presentation. Compare programs will be used to identify differences between the submitted and returned image selection criteria. Any differences will be saved and noted on the scenario data collection forms.